17, slit plate **14** and light receiving element **13** constitute a light receiving system; and these light emitting system and light receiving system constitute an optical transceiver. Besides, the above-mentioned polygon mirror **15** and motor **18** constitute an optical scanner. The optical unit main body **19** is provided with three motor fixing holes **19***a* for fixing this optical scanner (motor **18**).

[**0017**] The laser light emitted from the light emitting element **11** is changed into parallel light by the collimation lens **12**, passes through the aperture **16***a* of the aperture mirror **16**, is angularly scanned in a plane which is substantially parallel with the display screen **10** by a rotation of the polygon mirror **15** and projected onto the recurrence reflection sheet **7**. After the reflected light from the recurrence reflection sheet **7** is reflected by the polygon mirror **15** and the aperture mirror **16**, the reflected light is focused by the light receiving lens **17** to pass through the slit **14***a* of the slit plate **14** and enter the light receiving element **13**. However, if the indicator S is present on the optical path of the projected light, the projected light is cut off, and therefore the reflected light does not enter the light receiving element **13**.

[**0018**] The optical units **1***a* and **1***b* are connected with light emitting element drivers **2***a* and **2***b* for driving the respective light emitting elements **11**, light receiving signal detectors **3***a* and **3***b* for converting an amount of light received by the respective light receiving elements **13** into an electric signal, and a polygon controller **4** for controlling the operation of the respective polygon mirrors **15**. Moreover, reference numeral **5** represents an MPU for calculating the position and size of the indicator S and for controlling the operation of the entire apparatus, and **6** represents a display device for displaying the results of the calculations performed by the MPU **5**.

[**0019**] The MPU **5** transmits drive control signals to the light emitting element drivers **2***a* and **2***b*, so that the light emitting element drivers **2***a* and **2***b* are driven according to the drive control signals and the light emitting operation of the respective light emitting elements **11** is controlled. The light receiving signal detectors **3***a* and **3***b* transmit the light receiving signals of the reflected light of the respective light receiving elements **13** to the MPU **5**. The MPU **5** calculates the position and size of the indicator S based on the light receiving signals from the respective light receiving elements **13**, and displays the results of the calculations on the display device **6**. Here, the display device **6** may also serve as the display screen **10**.

[**0020**] In such an optical scanning-type touch panel of the present invention, if the explanation is given with respect to the optical unit **1***b*, for example, as shown in **FIG. 1**, the projected light from the optical unit **1***b* is scanned from a position where the projected light enters the light receiving element **13** in a counterclockwise direction in **FIG. 1** via a position where the projected light is shielded by the light shielding member **70**, and comes to a position (Ps) where the projected light is reflected by an end of the recurrence reflection sheet **7**, that is, a scanning start position. Thereafter, the projected light is reflected by the recurrence reflection sheet **7** until it comes to a position (P1) where the projected light reaches one end of the indicator S, but the projected light is shielded by the indicator S up to a position (P2) where it reaches the other end of the indicator S, and then the projected light is reflected by the recurrence reflection sheet **7** until it comes to a scanning end position (Pe).

[**0021**] Next, the following description will explain the internal structure of the optical units **1***a* and **1***b*, which is a characteristic feature of the present invention. Each of the optical units **1***a* and **1***b* of the optical scanning-type touch panel of the present invention is constructed by disposing the light emitting system composed of the light emitting element **11**, collimation lens **12** and aperture mirror **16**; the light receiving system composed of the aperture mirror **16**, light receiving lens **17**, slit plate **14** and light receiving element **13**; and the optical scanning system composed of the polygon mirror **15** and motor **18** in the optical unit main body **19** as shown in **FIG. 3**. In other words, as to be described later, first, the members of the light emitting system and light receiving system are disposed in the optical unit main body **19** while adjusting the optical axis, and then the optical scanning system is disposed using the motor fixing holes **19***a* to construct the respective optical units **1***a* and **1***b*.

[**0022**] Thus, since all the optical members of the light emitting system, light receiving system and optical scanning system are mounted on a single optical unit main body **19** as one unit, it is possible to regulate the verticality and parallelism with high accuracy between the optical axis and the optical unit main body **19**. Moreover, the number of parts and the number of steps of adjusting the optical axis can be reduced, thereby achieving a low cost.

[**0023**] The following description will explain the mounting and structure of the respective optical members.

[**0024**] Optical Scanning System

[**0025**] The optical scanning system composed of the polygon mirror **15** and motor **18** is mounted on the optical unit main body **19** with the use of the motor fixing holes **19***a*. **FIG. 4** and **FIG. 5** are cross sectional views showing examples of mounting the polygon mirror **15** and motor **18**, and **FIG. 6** is an upper view thereof. A motor shaft **18***a* of the motor **18** is inserted into a cylindrical hollow section of the rectangular parallelepiped hollow polygon mirror **15**, the upper surface of the polygon mirror **15** is covered with a hollow disc-shaped press plate **21**, and the polygon mirror **15** and motor **18** are fixed to the optical unit main body **19** with one screw **22**. A ring **23** is interposed between the screw **22** and press plate **21**.

[**0026**] Thus, since the polygon mirror **15** and the motor **18** are fixed at one point, the number of working steps for mounting is reduced compared with the number of working steps for fixing of the polygon mirror **15** and motor **18** at a plurality of points. Moreover, since the ring **23** is interposed between the screw **22** and press plate **21**, mounting defects due to play at the lower face of the screw neck will not occur.

[**0027**] In the example shown in **FIG. 5**, the inside of the polygon mirror **15** has a spot-facing structure so that all the press plate **21**, screw **22** and ring **23** are contained in the inside of the polygon mirror **15**, thereby saving space in a height direction.

[**0028**] As shown in **FIG. 6**, since the outside diameter of the press plate **21** is made smaller than the diameter of the inscribed circle of the polygon mirror **15**, it is possible to